Deloitte.

AI Academy Capstone:
Increasing Efficiency of Heart Disease Diagnoses using ML Models

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MAKING AN IMPACT THAT MATTERS since 1845

Contents

Background Information

Severity

World's **leading** cause of death

Spread

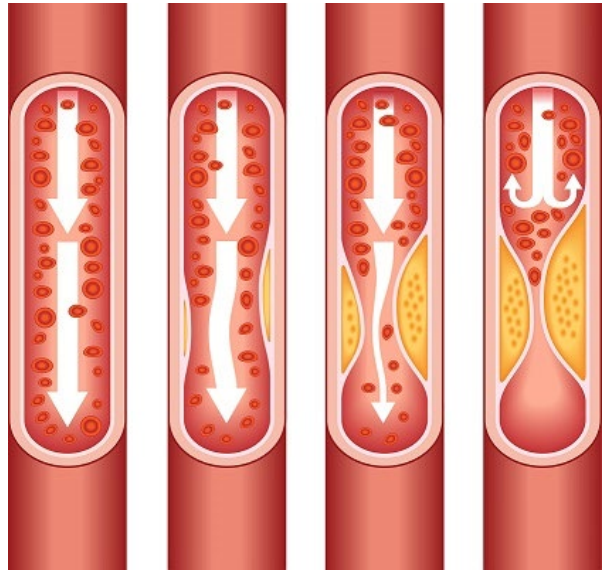
17 million annual deaths

Spending

Heart disease cost the United States about **$229 billion** each year

Trained algorithms would be able to help doctors identify patterns in large amounts of data, which can improve accuracy and timeliness of diagnoses. In addition, it would decrease pressure on medical professionals and have some positive effect on the cost, efficiency, and price of medical treatment.

What is heart disease?

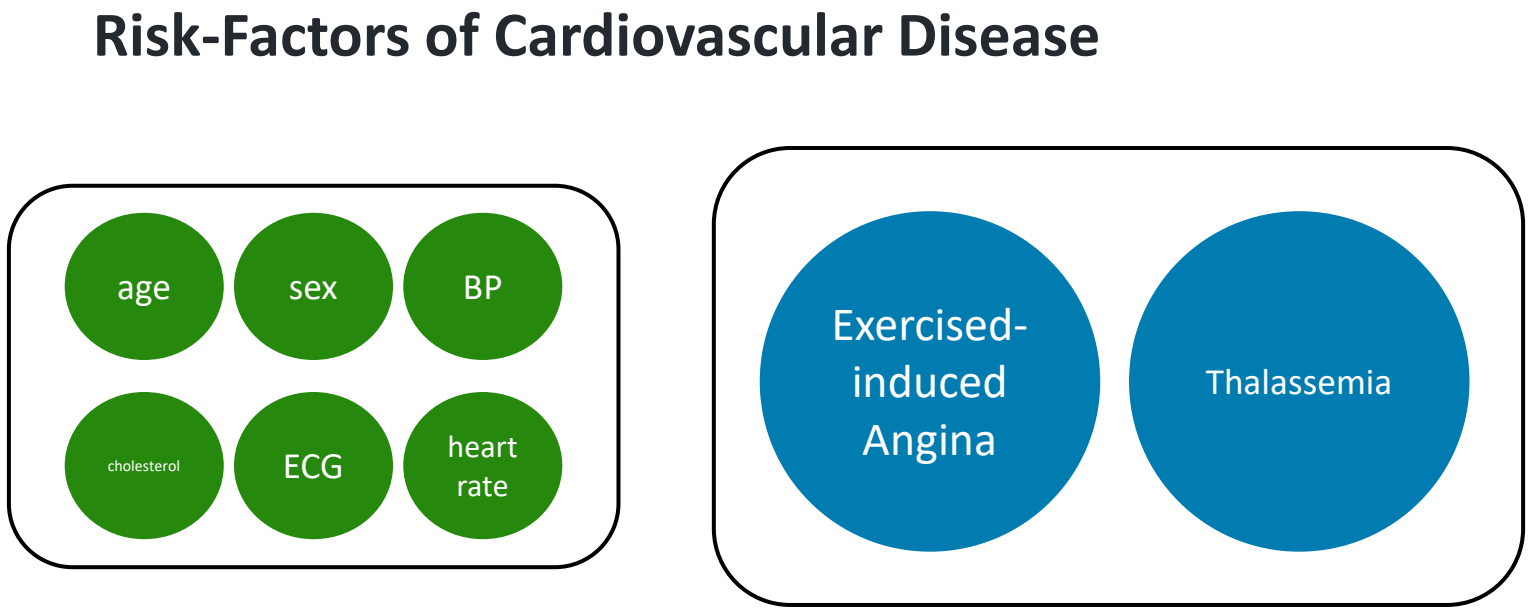


As plaque builds up in the arteries of a person with heart disease, the inside of the arteries begins to narrow, which lessens or blocks the flow of blood. Plaque can also rupture (break open). When it does, a blood clot can form on the plaque, blocking the flow of blood.

https://www.cdc.gov/heartdisease/facts.htm

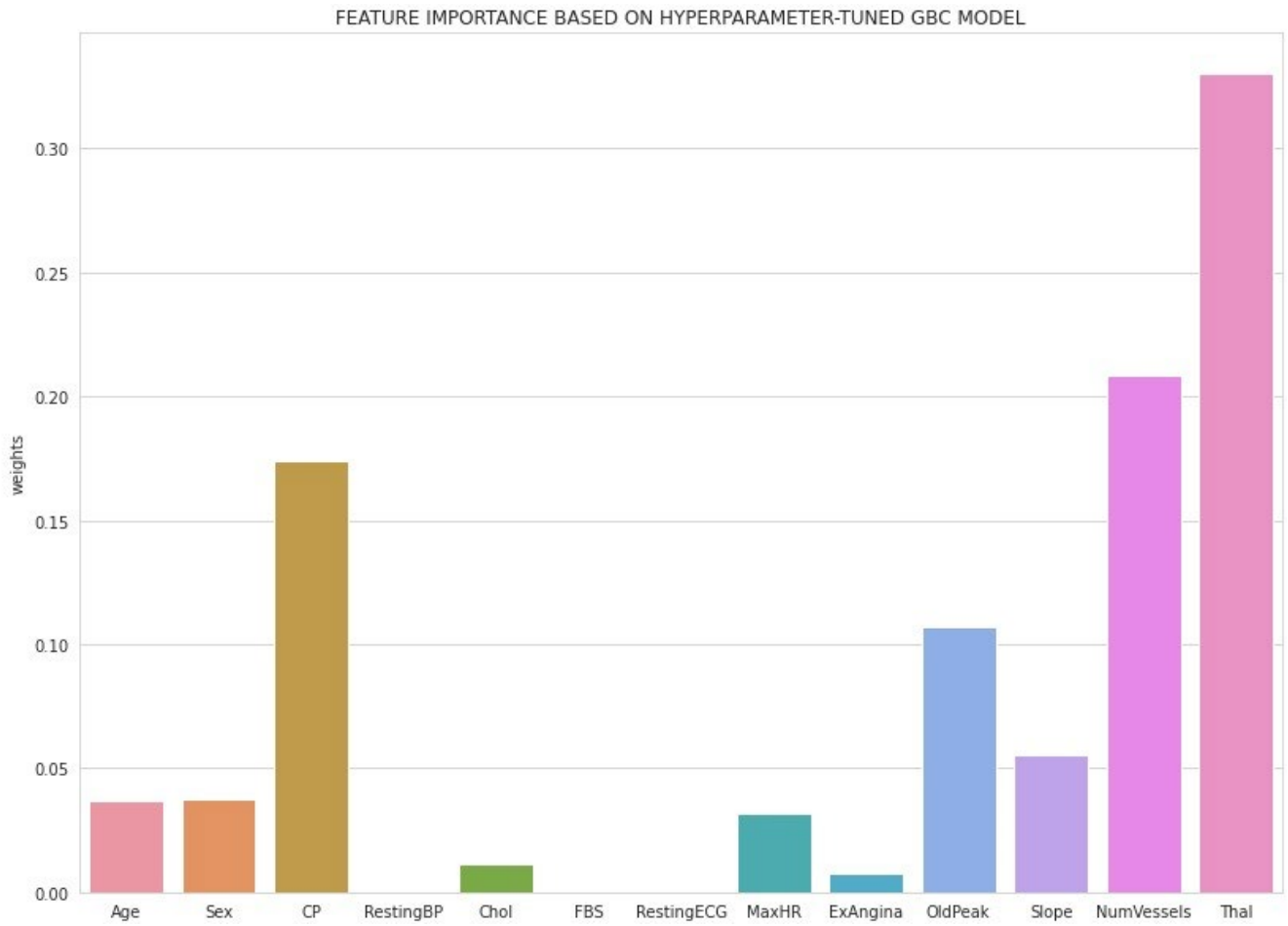
Understanding the Problem

In a risk assessment of cardiovascular disease conducted by Björn Dahlöf, he cited "hypertension" and "high levels of cholesterol" as important indicators of cardiovascular disease worldwide. [4] Based on this research, **predicting that thalassemia, cholesterol, and resting blood pressure will have the highest effect on accurate diagnoses** is a viable initial hypothesis.

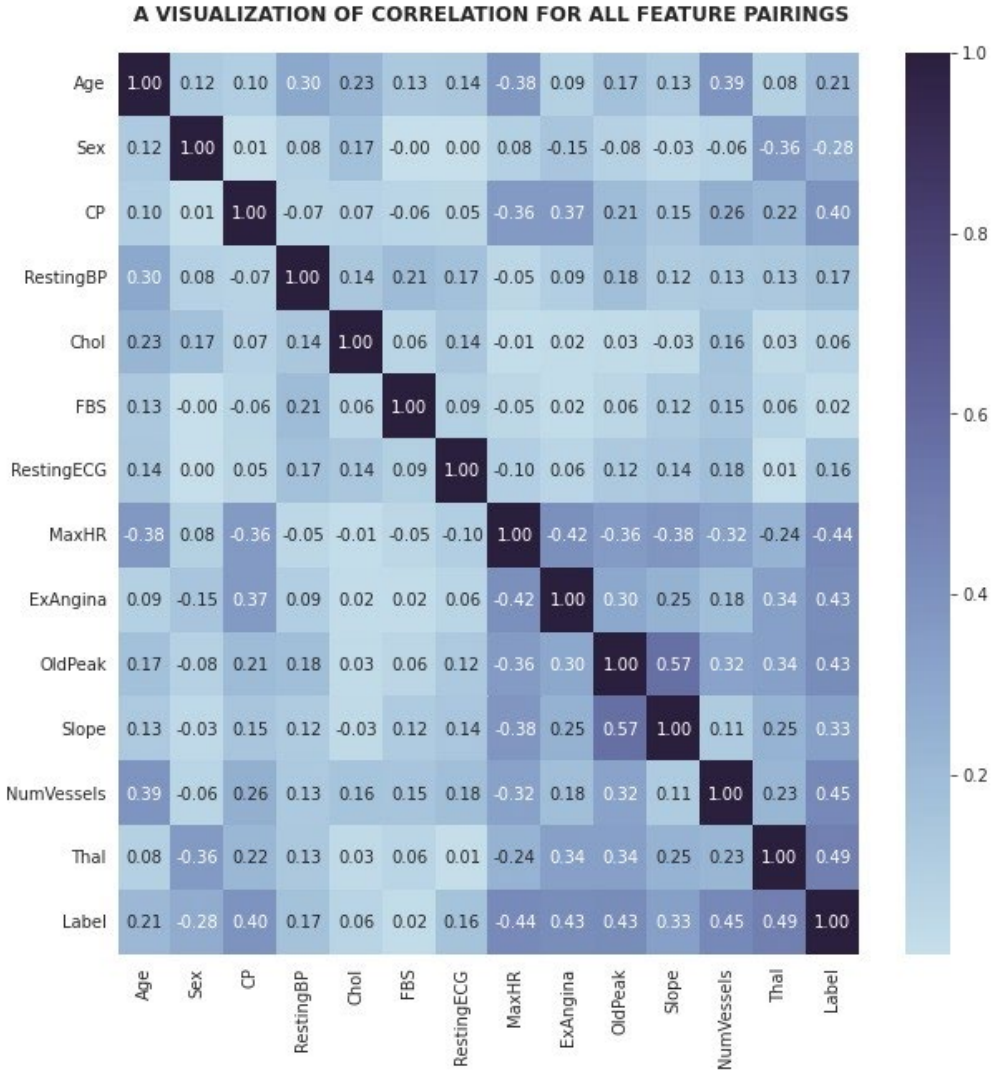


https://pubmed.ncbi.nlm.nih.gov/20102968/

What are the most important features based on analysis?



Can we quantify the correlation between our features and the target?



Limitations

Race of Ethnic Group	% of Deaths	Male, %	Female, %
American Indian or Alaska Native	14.2	15.5	12.7
Asian	18.9	20.0	17.8
Black (Non-Hispanic)	20.7	21.0	20.3
Native Hawaiin or Other Pacific Islander	20.8	21.9	19.4
White (Non-Hispanic)	21.3	22.7	19.8
Hispanic	15.8	15.8	15.8
All	20.6	21.6	19.5
More Than One Race	18.2	19.2	16.9

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